PugetSoundPartnership
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Species and Biodiversity Topic Forum Workshop

Everett, May 1, 2008
Workshop Summary

Meeting Purpose
In April 2008, the Puget Sound Partnership asked experts from around the region to lead a series of six topic forums, each designed to address one of the Partnership's six goals (human health, quality of life, water quantity, water quality, species/biodiversity/food web, and habitat/land use). Forum leads helped identify a core team and developed a discussion paper guided by science and policy questions provided by the Partnership. Each topic forum (with the exception of quality of life) hosted a public workshop to present their findings and solicit feedback.

Meeting Overview
Approximately 80 people attended the Species, Biodiversity and Food web topic forum at the TOC Conference Center in Everett. Among those represented were local and tribal governments, local organizations, businesses, federal and state agencies, non-profit organizations, and citizens.

Meeting Summary
The meeting facilitator, Angie Thomson, welcomed participants to the meeting and introduced presenters, Partnership staff and topic forum leads. Martha Neuman, Action Agenda Director, gave a presentation including an introduction and context for the Partnership, an overview of the topic forums and what the Partnership's expectations were for this workshop.

The following is a list of questions and comments heard after the presentation. Answers are indicated with italics:

What is the importance of the discussion papers? The amount of emphasis you put on the actual documents will determine the time and energy we spend reviewing and commenting on them. *They will be used as an essential background piece, although they will remain short. Give us more detail if you feel like there is something missing, or gaps, the science panel will be using this information to help fill those deficiencies.*

Can you reiterate how the comments online get incorporated? *We are taking comments by mail, online, and at workshops. Comments are being organized by topic and then sent to the core team, which will group them into major themes for consideration.*

Session 1: What do we know about the status and threats to Puget Sound?

Mary Ruckelshaus, National Oceanic and Atmospheric Administration (NOAA), gave a presentation on the ongoing risk analysis work that is being conducted by NOAA and guided by the Science Panel.

The following is a list of questions and comments heard after the presentation. Answers are indicated with italics:

- The data is currently in Excel spreadsheets. Are you considering using a real database with relational data? *We would love to see that happen, however it is a question of resources. We would need to think hard about how to fund a relational database and what the attributes might be.*

- Let me suggest Bob Johnston, who has experience with the U.S. Navy Envest program.

Wayne Palsson from the Species and Biodiversity core team gave a presentation about the status and threats to species, biodiversity and foodwebs.

Angie Thomson facilitated a discussion based on the following questions:

- What did we get right?
- Have we missed any major findings?
- What are the key themes from this paper that should carry forward to the Action Agenda?

The following is a list of questions and comments heard regarding this session's discussion questions. Answers are indicated with italics:

- The concept of shifting baselines needs to be included to understand that what we see on the ground today is already impacted. There is a domino effect happening and the science needs to adjust for these shifting baseline issues.

- There are some elements missing from the tools and measurements. Citations from data might address salmon and eagles, but there are a lot of "little brown organisms" that aren't paid attention to and they are important. For example, the clams are disappearing from certain areas. I grew up here and used to dig clams in Puget Sound. Five years ago they were very abundant, now they are all but gone in places like the Saratoga passage. What is the impact of the Littleneck clams? I doubt anyone did a baseline study on that. There needs to be a space in the document for anecdotal information to help determine where we want to go.

- On page 3, there is a description of the lower trophic species. Then, on page 8, subsection B, it states, "...bottom fish are in good condition." This statement contradicts what is on page 3. The paper is relatively good, but the attention to the

forage fish needs to be improved. We do have good historical information on these populations, yet no recognition is paid to the largest herring stock in the State, which is listed as doing moderately well in the risk analysis, but is not doing well compared to historical data. If we don't reflect that decline, then we are creating gaps in the document. *Our statements are still correct; the total number of stock is still pretty good. The Cherry Point Herring stock is not as good comparatively. The Sound's largest individual biomass stock is not as good as it used to be, but in the Central and South Sound, where we have the largest stocks, they are in good condition.*

- We need to look at how bird populations have been affected by the food web. We need to use more caution when using government reports and statistics. For example, it is unlikely that killer whales will recover from the low number they are at now and we may set the recovery bar undesirably low. There are a lot of stocks for which we do not have up-to-date population data in order to assess their eligibility for inclusion on the Endangered Species List, even though we know they are in trouble. Herring stocks are very important to the food web as a whole. We are understating our problems if we are just using the Ecological Society of America data for status. Locally, species may be endangered, but because somewhere they are more abundant, they are not listed. The Biological Review Team has some viability analyses on orca whales. Generically, the International Union for Conservation of Nature (IUCN) Red List of Threatened Species is a good place to look for status and categories. Those categories are more realistic than some of the government criteria. *There are alternate definitions of species viability.*

- There is a conceptual bias in the discussion paper. You need to put species in habitat classifications. The information about food webs gets lost in the discussion by only using the upper end of the food web.

- The content in this paper has been so simplified in the attempt to produce a short document that it misses a lot. It is too simplified; we need a very thorough understanding of the higher trophic levels to save the Sound. There are no invertebrates discussed in the document. There are serious data gaps in the document, but if those exist because there are truly gaps in our knowledge, then that needs to be made obvious in the document so we can work to fill those gaps.

- Even in the interest of keeping the list short, we do need to give examples. Zooplankton are missing from the paper in places where it is critical. As far as primary producers, cottonwoods are the only ones mentioned. At the upper trophic levels the document immediately jumps to salmon. Salmon should be included at the beginning of the upper trophic level or at the intermediate trophic level.

- There is some uncertainty on how pollutants are captured in this effort. Abundance of species, characteristics, Polychlorinated Biphenyl (PCB) levels in herring and other species needs to be mentioned. *The Water Quality core team thought that the Species, Biodiversity and Food Web core team was treating PCB levels, but we thought that they were doing it. Therefore, PCB levels fell through the cracks but will be included in future versions of this document or the water quality document.*

- A recent report by the Environmental Protection Agency found elevated levels of PCBs in Puget Sound herring similar to that in the South Sea.

- I also found it remarkable that zooplankton where not mentioned. Having worked on Puget Sound food webs for the past 30 years, I have found that zooplankton are the most important piece of the food web. They are both culturally and economically important because all consumer fish either eat zooplankton or other fish that eat zooplankton. In San Francisco there was nothing done for years and then a study discovered that the native zooplankton species was overtaken by an Asian species. A similar thing may happen here. A rockfish study found that smaller rockfish were feeding on zooplankton. Zooplankton are found in a variety of fish and it is remarkable that they are not covered in this paper.

- On page 3, Open Water Ecosystem, it states that amphipods primarily inhabit eelgrass, but that is not true.

- We need to make sure toxics do not get ignored. This document gives us an extremely valuable literature review and source citations. The Partnership should make all of these sources available. *We will make sure this happens.*

- Thanks for the inclusion of invasive species in this document. There is a gap in the effects of threats, specifically with the many invasive pathogens and parasites. An important threat is the Viral Hemorrhagic Septicemia (VHS) virus currently found in the Great Lakes. It is incredibly dangerous and is killing a lot of fish species. The effects on saltwater species are thus far unknown.

- What is the purpose of this discussion paper? Is the information definitely driving the Action Agenda, or is it an overview of the issues? There is a lot of detail missing; my understanding of the Partnership is that its scope is crest to crest. Are the uplands included for uplands sake or for marine sake? What is the definition of species? Aren't plants species? Plants are not mentioned in the document. Depending on the purpose of the document, I might be ok with this. But if this document is to drive the Action Agenda, then we need to make sure that all those details are included. It is missing a lot on the upland material. *These are good questions, ones that we have been wrestling with. We should take this opportunity to make documents that drive the Action Agenda rather than an overview. The*

challenge is how to keep the documents short. References are key. We can't spend a lot of time writing all of the details, but we can cite the articles that do go into a lot of detail. It is not upland for marine sake, the scope is crest to crest and we need to fill in that gap. Eelgrass is a species. It has to be covered in this paper, or the Land Use and Habitat discussion paper. This is a logistical issue that needs to be sorted out.

- The task of trying to address and itemize all the issues is huge. There are very big issues that are going to be difficult to tackle if we need to get comments back by May 6.

- Is there an assumption that more is better in some cases? There is a crossover between science and outreach. There is a gap in our knowledge, for example, we don't know the historical populations of moon snails and balance with other populations. We need to have an idea of historic populations of species. We need to understand that just because there is a lot more of a particular species now than there was before, it isn't necessarily better. It may mean that the system is out of balance. It is important that we engage the terrestrial stakeholders as well.

- Putting primary producers in the habitat discussion is very unsatisfying. Many of these species are not considered habitat. You couldn't really treat them in an ecosystem fashion, only primary producers should be considered in this group.

- I am glad to see all the scientists here. I am concerned about a high level ecosystem approach to making policy. We need to look at specific species and habitats to make policy. The Washington Legislature tried to pass a bill to make all septic systems capable of removing nitrogen without waiting for the University of Washington to finish its Hood Canal study, which might prove that Hood Canal is experience natural variability. In Canada, an undisturbed habitat has been shown to be experiencing the same variability. My message is that the amount of money we are spending on science for Puget Sound is too little.

- We need to look at activities that have been in our waters or have economic components. My concern is open cage fish farming. VHS has been found in some farms. There is a site specific containment plan in place but that doesn't always work. I am also concerned to hear that a tribe is keeping Coho in cages and releasing them. They lose their migratory instinct and become available to sport fishermen, but they eat smaller fish including juvenile salmon. This activity is supporting fisheries and recreation, but it may have consequences. NOAA has made some proposals to mitigate this issue that should be considered here.

- We need to be sure that we are thinking about plants and tie more data to terrestrial life. We make an artificial waterline, but that is not what nature does. We need to be cautious that we do not make it too simple.

- After rereading the definitions section, I find there are fewer definitions about what a healthy Puget Sound looks like and more on what we would like to see. I recommend reconsidering the definitions and expanding them substantially. The definitions we use are going to be important for our indicators and monitoring work when we look at adaptive management. This is the best starting point in terms of linkages. It is more important to get food web concepts and models and linkages right. Ultimately, this will be the information we feed into the management piece.

- We need to think more about the importance of the food web and think carefully about what you want to be included in the indicators. For instance, a top down or bottom up trophic level discussion is missing.

- Regarding Cherry Point Herring, a 2007 lab study took herring embryos from San Francisco to BC. It was found that the Cherry Point Herring temperature tolerance was similar to that of San Francisco herring. This shows that there may be genes that are important to other herring in terms of climate change.

- A discussion of species in addition to eelgrass that provide habitat for other organisms would be valuable. *We were told to discuss species in the absence of habitat so we ended up talking about ecosystem management and food web as a critical point in the paper. I think we should also look at the value of indicator species. The Department of Fish and Wildlife and others have done great work on harvest seal blood chemistry, which could be great indices of bioaccumulation.*

- Invasive species received soft treatment in the document but there is a lot of information out there and that is something that should be highlighted in the Action Agenda.

Session 2: What is the documented effectiveness of solutions to addressing the threats? What are we currently dong to address the problem?

Core team members Wayne Palsson and Joe Gaydos gave presentations on the documented effectiveness of solutions to addressing threats and the current approaches to addressing the problem.

Angie Thomson facilitated a discussion based on the following questions:

- What did we get right?
- Have we missed any major findings (in the literature)? Locally? Elsewhere?
- What are the key themes from this paper that should carry forward to the Action Agenda?

The following is a list of questions and comments heard regarding the discussion questions. Answers are indicated with italics:

- Recently a new water ballast management bill, the Ballast Water Management Act, was passed in Washington D.C. However, a lot of other bills would strip any state rights to manage water. This is urgent because we made some progress but we could lose it tomorrow. These are the kind of political threats going on right now.

- Many species are introduced from ship and boat hulls and we haven't even started talking about that here. It needs to be addressed in the discussion paper.

- In the water quality discussion we asked, "Are current regulations adequate to protect Puget Sound?" Similarly, are harvest regulations adequate to protect resources? The water quality answer was, "hard to say because they are not being enforced."

- We need a monitoring program to evaluate if regulations are adequate or not.

- We need to put forth a bag limit on catch. I haven't seen any analysis on how effective that is. Also, there is very little mentioned on invasive species. There is data on invasive species in the literature. *People working on invasive species should go to the Web site and provide the core team with information.*

- Not mentioned in the paper is the Partnership's balance between private sector interests and government interests. Regarding invasive species, when I read what is being done I got the sense that cultured species are bringing in invasive species, but this hasn't been the case in decades.

- I think you need to be aware of unintended consequences to your actions if you don't understand something like the food web. You may do something that is helpful to one species while hurting another species. Another issue regarding invasive species and ballast water is uniform discharge standards. I worked on uniform discharge standards for the Navy and it is hard to ask captains to do this, but we need to look at standards at both the national and international levels.

- We need to keep in mind that fish, avian, and mammal species don't just stay in Puget Sound for their lifespan; they leave at some point. We need to focus on what happens here in Puget Sound, but we also need to be aware that there are outside influences we need to cope with. Dealing with uncertainty could be improved in the document. Some studies that quantify analysis of uncertainty can be biased. For example, +10% is a different story than the -10% side. The time lags in monitoring to action can drive species to extinction.

- Funding is critical. On paper we may prevent disturbance, but we don't have the funding for enforcement action and species get disturbed anyway.

- There are three ideas missing on page 34: site selection, avoidance and buffers. All marine vegetation is considered vegetation in other states, not just eelgrass. We also need to protect bird feeding and breeding areas.

- There should be more content developed about point source pollution aspects. The Partnership is a great vehicle to develop point source pollution quantification by annual discharge of chemicals by volume. This quantification could be mapped and linked to known issues, such as the decline in herring. We should know where hot spots are to ensure that follow-up is logically oriented.

- We need to add another section in the document that deals with plants, climate change, and sea level rise.

- There is an artificial separation between species and habitat in the discussion paper. What do juvenile fish use habitat for? We would like to suggest that another alternative approach is to look at a course filter vs. fine filter approach. The fine filter approach is used in habitats that provide for a lot of species that are not understood. The course filter is used for species that are understood. This approach is not addressed in the document. The Department of Fish and Wildlife has a framework that would lead to adaptive management and ecosystem based management.

- I have an issue with using adaptive management as a guiding principle. We need to commit the government to do monitoring and develop management concepts for habitat conservation plans. The Department of Natural Resources is doing this for the marine environment for the first time. There is a disconnect between habitat conservation planning and adaptive management. Habitat conservation plans have a 30 year outlook, but are locked, not adaptive. This potential disconnect should be acknowledged and identified if habitat conservation plans are employed.

- There are two reasons we have trouble managing invasive species: they are new and we don't know what pathways they are using to get here.

- It is very urgent that, starting this year, we adopt a monitoring plan. We should lay out key uncertainties regarding food web and biodiversity and start working on a plan. We are not going to get it right if we try to do it all at once; it should be an evolutionary process.

- The document mentioned a number of different groups that are out there addressing a variety of issues. There is not a clear link on how the Puget Sound Partnership is going to use those groups' expertise.

- Adaptive management is a key theme although the document itself falls short in its explanation. This should be strengthened to explain that adaptive management has never really been tried but could be used as a cornerstone of this process.

- Corridors and passages are important concepts that need to be identified in the document.

- The document should define geographic scale and scope to push an understanding of what healthy is.

- Where are strategy, management, and research going to be addressed? We need to prioritize the importance of adaptive management, improved knowledge, and information management through storage, sharing, and availability. *We need to execute whatever we say we are going to do. Some organizations won't allow adaptive management. Adaptive management as a principle will be woven through this Action Agenda. We hope to get your input. We need to drive to execution and be able to say we got what we projected we would get. We are asking, "Is this what we need to do to clean up Puget Sound?" We need to admit when we make mistakes and clean it up when we do. If we are going to make this work, we have to clean up Puget Sound. We have to do it right and do what we are talking about regardless of who gave us the answer; it's not a turf issue. The first document won't be totally right but I am sure you will tell us that.*

- Two questions: how do we set up experiments to determine the right science and how do we turn science into a management decision? This is a critical part of a performance measure.

- The Neah Bay tug was mentioned as a success but it still requires a lot of work.

- Adaptive management and precautionary tools rely on mitigation.

- Buying land and restoring land were missed as tools in the document.

- Strategic monitoring is important and should be highlighted in the document.

- Puget Sound contains more invasive species than anywhere else in the United States. We need to have better science and more investment in what we have to protect already. We need to educate our communities so they understand us. If we had done that 40 or 50 years ago, we may not be in the position we are in. Our past political decisions put us here. Let's turn that around.

- This is a massive study of water quality, but all of these words will be for nothing unless the Action Agenda timeline ends with a finalized management agenda instead of just an action plan. In the end, the words will be recorded but not make any difference.

- Themes in this document rely heavily on top down regulation, but both top down and bottom up are important. The importance of education and values is missing from the paper.

- Long term cumulative effects do exist related to the aquaculture industry. This process is not benefiting our ecosystem because it is not possible to recover our species unless we take a truly comprehensive approach.

- We need to consider that issues and regulations from Canada will have a big impact on us. We should expand this discussion to include conversations on the potential disease pathways into Puget Sound.

- Science Question 2, Management Approaches Addressing Species, Biodiversity, and the Food web, does not discuss how you would approach these problems using ecosystem-based management.

- We not only have to be mindful of invasive species coming into Puget Sound, but also of those species leaving Puget Sound to invade some other ecosystem. We cannot be Puget Sound-centric.

- Adaptive management is the right approach. The execution, however, is not all that good. Let's not set ourselves up to fail. If we don't implement it perfectly the first time, we should not give up, but keep trying until it is right.

Session 3: What criteria should we use? What actions should we stop, add, realign, continue?

Core team member Mary Mahaffy gave a presentation on criteria and actions.

Three facilitated workgroups were asked to consider the following questions:

- Have we accurately captured the principles that should be reflected in the strategies to address threats to Puget Sound?
- Did we capture actions that should continue, be added, be changed or stopped?
- What are the key themes from this paper that need to be carried forward into the Action Agenda?

Discussion notes from these workgroups are available upon request. Key responses are highlighted below:

Have we accurately captured the principles that should be reflected in the strategies to address threats to Puget Sound?

- General agreement with those criteria and principles in the paper
- Solutions need to be science-based first and economics-based second
- Address institutional barriers in Puget Sound

Did we capture actions that should continue, be added, be changed or stopped?

- There is significance in the linkages between processes - the artificial process talks about species and not habitat
- Look at existing regulations and enforcement
- Use sequencing to help filter and strategize regarding urgent elements

What are the key themes from this paper that need to be carried forward into the Action Agenda?

- Do not let Puget Sound become a great big sink for a lot of money and resources, forgetting about issues in the rest of the State and Canada
- Be careful when prioritizing actions; grabbing at the low-hanging fruit may miss the root of the problem
- Implement plans that are already out there

Wrap up and next Steps
Angie Thomson thanked everyone for coming. She commended the group for their high-level of participation and commentary throughout the day and encouraged those who had further comment to do so until the May 6 comment deadline. Chris Townsend, Assistant to the Director of the Partnership, also thanked everyone for coming and informed the group about some other processes that were happening simultaneously with the topic forums such as: education and outreach, the science panel work, funding strategy development, and an enforcement program.